directions in which their variant and aberrant bio-chemical affinities enable them to annex material conformable to the building up of their characteristic type.

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A CRITICISM OF CURRENT DOCTRINES CONCERNING HERNIA.*

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ALTHOUGH hernia is one of the commonest of surgical diseases and the subject of an abundant literature, both ancient and recent, surgeons have by no means attained to anything like unanimity either with regard to its pathology or its treatment. The root of this diversity is the want of a generally accepted theory of causation. Indeed, there exists in most textbooks, and in the minds of many surgeons, what I believe to be a fundamental misconception on this subject, which I shall attempt to show is responsible for much confusion in treatment. Stated briefly, this misconception consists in the belief that the majority of inguinal hernias are acquired, whereas there are, I think, conclusive reasons for believing that all, or almost all, are congenital. The pouch of peritoneum which passes down the inguinal canal into the scrotum and forms the peritoneal investment of the testicle and the tunica vaginalis, under normal circumstances becomes completely obliterated between the tunica vaginalis and the internal abdominal ring, within a short but not accurately-known period after birth. In a person in whom this piece of development has been completed in normal fashion, an inguinal hernia can only arise by the protrusion through the inguinal canal of an entirely new sac of peritoneum carried in front of the intestine or other organ which happens to protrude. Such a condition would be a true acquired inguinal hernia and would be explicable on exactly the same principle as the post-operative hernias. That is to say, it would be the effect of normal or excessive expiratory effort acting on a weak or undefended part of the abdominal wall. This is exactly the view which is commonly held. On *a priori* grounds there is no objection to this view. There is no greater difficulty in believing that abdominal strain may force gut and peritoneum through the inguinal canal than in believing it capable of causing a hernial protrusion in an abdominal scar. Nevertheless the evidence against inguinal hernia at any rate of the ordinary oblique variety being ever really acquired in this way, independently of any developmental defect is, I think, quite conclusive. The crux of the question is this: does oblique inguinal hernia ever arise without a pre-existing sac formed by a patent or partially patent funicular process?

There is absolutely no reason to suppose it does, and many reasons against such a supposition. In the first place, it is known that inguinal hernia does sometimes arise from a patent funicular process, because in one form the protruded viscera actually lie in the tunica vaginalis, and this form has always been named the congenital variety. But if this occurs when the whole peritoneal pouch remains open, surely it will occur just as readily when only the upper part remains open, and the condition then is anatomically precisely what is found in the ordinary oblique inguinal hernia. But there are many other arguments in support of this view besides its inherent probability. In every oblique inguinal hernia, if examined soon after its appearance, there is a well-marked neck; the aperture of exit is small in relation to the size of the whole sac, which has the shape of a sausage or a pear. In traumatic hernias, on the other hand, the aperture of exit is relatively large, and the whole hernia has a roughly hemispherical form. Moreover, many inguinal hernias of considerable size appear quite suddenly; in other words, the sac is already there to receive the protruded viscus. If it were not so, it is almost inconceivable that a pear-shaped pouch of peritoneum several inches in length, and of still greater circumference, could be suddenly extruded from the belly by a single expiratory effort. Any attempt to produce such a condition artificially on the cadaver would certainly rupture the peritoneum.

Again, a hernia may be of congenital origin, namely, due to a pre-existing patent funicular process, and yet not appear at birth or even in infancy. The admittedly congenital variety in which the viscera lie in the tunica vaginalis may make its first appearance at any age. In other words, a patent funicular process may exist for an indefinite number of years without giving rise to hernia, until some extra violent effort, or some weakening of the sphincter muscles of the inguinal canal, forces or permits the descent of a portion of the viscera into the sac. If therefore the first appearance of the hernia, that is, the first descent of the viscus into the sac, may be delayed for years in a person in whom the tunica vaginalis communicates freely with the peritoneal cavity, there is no difficulty in believing that a patent funicular process exists from birth in every oblique inguinal hernia, whatever the age at which the hernia first appears. This supposition, moreover, is not a mere hypothesis. The existence of a patent funicular process in patients with no hernia has been several times actually demonstrated as in a case quoted, as by Mr. Langton in his Bradshaw Lecture on the Association of Hernia with Descent of the Testis. I have myself made a similar observation in two cases; one in which an operation for radical cure was accidentally performed on the wrong side, where a patent sac was nevertheless found; another in a case of encysted hydrocele of the cord where the funicular process above the cyst was found widely patent, although previous to the operation there was no hernial impulse or swelling.

Again, Sachs, quoted by Stiles, states that he found the funicular process completely or partly open in 59 per cent. of male children under four months old—obviously a much larger proportion than those possessing hernias at that age.

Lastly, if ordinary oblique inguinal hernia were in some cases due to a pre-existing congenital sac and in others due to the formation of an entirely new protrusion of peritoneum, we should expect to find that the majority of hernias in young children were hernias into the tunica vaginalis, that is "congenital" according to the present nomenclature of the textbooks. As a matter of fact this is not the case. The great majority of the inguinal hernias of young children are precisely like the majority of adult cases, that is the sac of the hernia is completely shut off from the tunica vaginalis. With regard to this point all who have operated on many young children are unanimous, and my own observations, which are numerous, entirely confirm it. The evidence therefore appears to me to establish conclusively the presumption that in all oblique inguinal hernias there is a pre-existing sac formed by a congenital patency of the whole or of the upper portion of the processus vaginalis. That the sac of any oblique inguinal hernia is ever formed by an independent protrusion of peritoneum unconnected with the processus vaginalis there is on the contrary no evidence whatever; indeed the only proof possible would be the demonstration of the coexistence of an unclosed processus vaginalis with a separate hernial sac alongside it. This, so far as I know, has never been observed. It will be noted that the above arguments apply exclusively to the ordinary oblique inguinal hernia which enters the internal ring outside the epigastric artery and traverses the whole length of the inguinal canal; which has in fact the exact anatomical relations of the processus vaginalis. It is obvious that the direct inguinal hernia which leaves the abdomen on the median side of the epigastric artery and emerges directly at the internal ring is not explicable in the same manner. It must, I think, be attributed to the same causes as post-operative ventral hernia, that is, it is a genuine newly-formed protrusion of peritoneum and viscera through a naturally weak spot in the abdominal wall. With regard to this hernia the most important point is that it is uncommon. In 120 operations I have met with only two. Like all hernias due primarily to strain the sac is short and wide and never passes far into the scrotum.

The view that many inguinal hernias, beside those into the tunica vaginalis are really congenital in origin is not of course new. Many surgical writers have recognized it. But the merit of first clearly enunciating the view that in practically every inguinal hernia the sac is a pre-existing vestigial structure, and the chief factor in its etiology rests with Mr. R. Hamilton Russel, of Melbourne, whose paper on "The Etiology and Treatment of Hernia in the Young," published in 1899, has not, I think, attracted as much attention as it deserves. It was, however, alluded to and endorsed by Mr. Harold Stiles in his paper on "The Radical Cure of Hernia in Children," read at the annual meeting of the British Medical Association last year.³

* Read before the Birmingham and Midland Counties Branch of the British Medical Association.

Mr. Russel has recently published a suggestive paper, in which he gives reasons for believing femoral hernia also to be really due to a pre-existing sac due to developmental causes. Mr. Lockwood, in his well-known little book on hernia, admits that many inguinal hernias, especially those in children, are the result of a congenital defect of development. He attempts, however, to draw a vital distinction between hernias due to this cause and those which he regards as truly acquired, and he bases his practice largely on this distinction. Acquired hernia he attributes primarily to two chief causes—muscular flaccidity and undue length of the mesentery, the latter being either congenital or acquired. He advises strongly against attempting to cure such cases by operation. But if we examine the evidence by which Mr. Lockwood seeks to discriminate between congenital and acquired varieties we find it resolves itself into a question of age and the state of the abdominal muscles, and there is really nothing in his statements to refute the presumption that all oblique inguinal hernias are really congenital in origin. Moreover, although I agree with him that if flaccid parietes were the primary factor it would be futile to expect permanent cure from sutures, I have not hesitated to act on the opposite assumption, even in cases which, judged by his tests, would be quite unsuitable for operation. In other words, I have several times operated on elderly men with large hernias and flaccid abdomens. The time is still too short to test the permanence of the result, but all are at present well, following their occupation without wearing any kind of truss or bandage, and one of them is a man of 61, a gardener, on whom the operation was performed a year and nine months ago.

It is obvious the question of the congenital or non-congenital origin of the ordinary inguinal hernia is not of mere academic interest. If we accept, as I think we must, the congenital origin, several practical deductions must immediately be drawn. The first deduction is that every case could be certainly cured by an efficient removal of the congenital malformation—that is, the sac—provided the operation is done soon after the first appearance of the hernia, or, at any rate, before the presence of the hernia or the pressure of a truss have produced secondary distension and atrophy of the muscles of the inguinal canal. In other words, delay, whether a truss is worn or not, increases the difficulty of radical cure by operation. This furnishes an additional argument, if any were needed, in favour of operative treatment, and against the prolonged use of a truss. In the past the use of a truss has been the rule and radical operation the exception. I cannot but believe that this practice will soon be reversed, and the truss reserved merely as a clumsy palliative for those who, owing to age or infirmity or any other reason are unwilling to submit to operation. It is my own practice to offer operation to every able-bodied adult patient up to the age of 60 unless there are special contraindications. I do not press the operation, but content myself with pointing out the advantage of dispensing with a truss, and among hospital patients, at any rate, I find an increasing desire for the operation of radical cure. With regard to children the question stands on a somewhat different footing, because there can be no doubt, at any rate, when the hernia appears during the first year, that the use of an efficient truss enables in many cases the patent funicular process to undergo its natural obliteration. The truss in such cases is not, therefore, a mere palliative as it is in adults, but an efficient mode of treatment. It has, however, many disadvantages. It is excessively troublesome, and even when well used by no means certain in its results. If it cannot be left off by the age of 2 years there is little prospect of cure by continuing its use. In hernias which first appear after the first or second year a truss seldom cures. The operation in children is now so simple and expeditious, so certain in its result, and attended by such slight risk, that I recommend it in every case beyond the age of 9 or 10 months, and have sometimes for special reasons operated earlier, in one case at three months.

There is no need to describe the various methods of operating for the radical cure of hernia. Every surgeon has either invented a method of his own or adopted some other. For my own part, I have no hesitation in expressing my belief that the method described and practised by Kocher is by far the simplest, the easiest, and in all respects most satisfactory method ever devised.

With regard to the after-treatment, there are two directions in which surgical opinion is moving, as I believe, towards greater simplicity. One of these is in discarding the use of a truss after the operation in all but cases where the

inguinal region has been greatly weakened by age or by long presence of large hernias. For my own part, it is difficult to see much advantage in an operation for radical cure which leaves the patient, as far as the truss is concerned, in the same position as before, except, of course, where the hernia has been previously irreducible. The other practice, which I think is being gradually modified, is that of keeping patients five or six weeks in bed after the operation. I regard this as quite unnecessary. The average stay of my patients in bed has been ten to fourteen days, and I allow them to resume work at the end of the third week.

I hope at some future time to publish a complete account of my operations and their results at the end of three years after the operation, a time which gives a fair though not, of course, complete account of the liability to recurrence—for recurrence, when it occurs at all, usually takes place within twelve months. Since 1899 I have done about 110 cases of inguinal and 10 of femoral hernia. All of these cases have been kept under observation, and so far I know of only 3 recurrences. Not one of them, I should add, has worn a truss since the operation except these 3 cases, and they only after the recurrence was noted. Two of these were young men with inguinal hernias, and recurrence took place in both within six months. Both were among my early operations, and in both the recurrence was a small direct hernia. In one I omitted to suture the inguinal canal, although the external ring was large and the muscles somewhat lax. In the other the operation was probably also inefficiently performed. The third case was an inguinal hernia in a middle-aged multiparous woman with very flaccid abdomen and a violent chronic cough. She has since died, two years after the operation, but I have not been able to find the cause of death. It was probably from phthisis. Of the remaining cases, I have examined most of them at the end of twelve months, and have heard from all who have completed two years. All are perfectly sound. The cases are all consecutive and unselected. Many of them were very large. Twenty-two were under 3 years of age, many of these under 18 months. The youngest 3 months. Ten were over 40 years of age, two of these over 60, and one 75. The latter had a large irreducible hernia containing the bladder, and causing much discomfort and misery.

Excluding strangulated cases, there has been only one death, which occurred in a female child aged 7 seven hours after operation for double inguinal hernia. The necropsy revealed nothing except a marked florid engorgement of one lung only. The exact cause of death is obscure, but it was not due to shock, for the temperature rose quickly after the operation until death. Chloroform was the anaesthetic used. Only eight cases suppurred mildly, and they healed without difficulty and left no sinus. Suppuration in no case injured the success of the operation. This is one of the great advantages of Kocher's method. Suppuration in a Halsted's or Bassini's operation is often fatal to the result, and leads to rapid production of an ordinary ventral hernia.

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ETIOLOGY AND TREATMENT OF MUCO-MEMBRANOUS COLITIS.

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SYMPTOMS.

The symptoms of muco-membranous colitis differ according to the form it takes and its intensity and cases may be divided into three classes: 1. Those who are habitually constipated; 2. those who suffer alternately from constipation or diarrhoea; 3. those who suffer from persistent diarrhoea.

The first two classes are more frequent than the third; those who suffer from alternate constipation and diarrhoea are rather less than those who are habitually constipated. Of the cases I myself have attended at Plombières 50 per cent. were habitually constipated, 40 per cent. suffered alternately from constipation and diarrhoea, and 10 per cent. suffered habitually from diarrhoea.

The first symptom which attracts the attention of the patient is the presence of slimy matter and false membranes, which are generally evacuated with the stools. In some cases these secretions are sufficient in quantity to provoke of themselves an evacuation, and in these cases it is found that they are the sole constituents of the excreted mass.

The form, the consistence, the colour and the quantity of these masses are very variable; sometimes they present a membranous form, and are composed of long filaments, cylinders, tubes, with often a ribbon-like appearance. This last form explains why they have so often been mistaken for taenia. Perhaps the most frequent is the glairy form. In this the dejecta may appear as amorphous matters, sometimes mixed with faecal matters, at other times they form a voluminous mass large enough to fill a tumbler, in other cases they resemble sputa.